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I venture to propose as a name for the species *Balanus chelytrypêtes**.

XLI.—*On the Effects produced upon Animal and Vegetable Life by the Winter of 1838.* By P. J. SELBY, Esq., of Twizel House.

THE severity with which the year was ushered in by the long-continued frost during the months of January, February, and a part of March, the cold and long-retarded spring, succeeded by a chilly and ungenial summer, as well as a late and deficient harvest, place the year 1838 upon our records as one of peculiar, though happily of unwonted character. Under circumstances of such a nature, and which it is more than probable may not again occur during the limit of the present generation, a few observations upon the effects of so severe a season, as connected with animal as well as vegetable life, more particularly as affecting our own district, may perhaps prove not altogether uninteresting to the members of the club†. It will be in the recollection of those who attended to the weather, that, up to the 5th of January 1838, the season, with the exception of the first week of the previous November, when we experienced a severe but cursory snow storm, had upon the whole been temperate and mild: this was particularly the case on Christmas, and two or three following days, when the thermometer ranged from 52° to 55°, at which time, I may remark, many of the thrushes which still remained inland, were heard recording in distinct and audible key, thus flattering us with the hope that winter had divested herself of her characteristic garb, and that these sweet carols were to be the prelude of an early spring. These halcyon days, however, were of short duration, as, on the 6th of January, frost set in, accompanied in this district by showers or falls of snow and hail, which, in consequence of the calm state of the atmosphere, fell level upon the surface. It thus continued falling at frequent intervals, more or less, for nearly

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a fortnight, when the snow had accumulated to the depth of ten or twelve inches over the whole surface of the country, the frost at the same time continuing to increase in intensity, till every brook and pool was locked up in ice and frozen snow. In consequence of this deep covering, the birds, particularly those of the insectivorous tribe, or whose chief pabulum consists of worms and insects, soon began to feel the effects of famine; and blackbirds, redbreasts, hedge-sparrows, &c. were reduced, at a comparatively early part of the storm, to a deplorable state of weakness, and were daily found dead or dying from the combined effect of hunger and cold. Many fieldfares also perished at this early stage of the frost, though the great body of this emigratory species, soon after the commencement of the storm, moved southwards; the thrushes also, which I have previously observed were singing at Christmas, entirely disappeared, a precaution I have observed for many years to take place in regard to this species, whenever a storm or frost of any continuance has occurred. I may remark, that previous to the commencement of the storm, all the haws and other berries which are the occasional food of the thrush tribe, had been devoured by them, so that no resource of this nature was left them to fly to when the frost first set in. About this period of the storm, that is, after a fortnight's continuance, the arrival of a great variety of the rarer kinds of water-fowl along the line of coast proclaimed the intensity as well as the wide-extended range of the cold. Wild swans then made their appearance in flocks, and for two or three weeks several of these birds took up their residence in Buddle Bay, when, as may be supposed, their unwonted presence caused an active pursuit, and many individuals were shot. Among them, I may mention two that were taken alive, having been wounded, but only so as, in conjunction with their reduced condition, to incapacitate them for flight; these soon became very tame, and were afterwards placed by W. B. Clark, Esq. of Belford Hall, in a piece of water, where one of them continues to thrive, and now associates with a common goose; the other died during the course of the summer, apparently from the effects of some internal wounds it had received. Both of these were of the common or elk species (*Cygnus ferus*), nor did any specimen of *Cygnus Bewickii* come under my observation, though I am aware that a few individuals of this species were taken in other parts of the kingdom. In other districts of the country, and in the South of England, the destruction of these beautiful and noble birds was very great. Among the rarer species of water-fowl killed upon our coast, the following are deserving of notice. *Larus minutus* (Little Gull) near Embleton, the first instance, I believe, of its occurrence upon the Northumbrian coast; this is

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now in the possession of our brother member, Mr. R. Embleton. Several specimens also of the *Mergus albellus* (Smew), in the adult male plumage, in which state it is considered a rare bird, were killed upon different parts of the coast; and of *Podiceps rubricollis*, far from a common species, I saw several instances. Many specimens of the different *Colymbi* (Divers) were also shot, and wild-ducks, wigeons, brent-geese, scaup-ducks, pochards, tufted-ducks, and golden-eyes were very plentiful. Upon the southern coasts of England an equal or even greater influx of water-fowl took place, and the destruction, as may be conceived, was comparatively great. In Hampshire, I am informed, that a noble sportsman, who rented a small part of the coast expressly for the shooting of wild-fowl, killed during the storm the extraordinary number of 515 head of various kinds, among which were thirty-seven swans. This warfare upon the aquatic tribe continued for six or seven weeks, and it was not till the middle or latter end of March, that the wild-fowl began to shift their quarters, or yield to that influence which directs their migratory movements to the higher latitudes on the first approach of spring. Before a thaw took place, many of our hardy indigenous and resident land birds also suffered from the intensity of the frost and the want of food; partridges and pheasants were found dead in every direction, and even the hardy muir-fowl upon the higher grounds were many of them frozen to death. In Edinburgh, I am informed, that for weeks, after the first ten days of the storm, baskets full of partridges and other game were brought to the poulterers, which had died or had been caught in a dying state, and when taken into the hand were found so reduced as to be a mere collection of bones and feathers. Four-footed game also did not escape with impunity, and during a great part of the storm, their only food, in this district, was the bark and twigs of such underwood and young trees as appeared above the snow. But it was not in those districts alone in which the snow lay deep upon the surface, that animal life suffered from the severity of the season, for I find that in Dumfriesshire and other parts along the western coast, where the fall of snow was very trifling, and scarce whitened the surface, great mortality nevertheless prevailed amongst the feathered race, all access to food having been as effectually prevented by the stony hardness of the earth, as it was where the hoary covering hid everything from view.

We now turn to the effects of the frost upon the vegetable fibre, and here we find evidences of its intensity equally striking, and as fatally injurious to certain plants as it was to animal life. In this district its severity was plainly demonstrated by the appearance of our hardy native, the common whin; this shrub, wherever fully ex-

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posed, or in so far as it remained uncovered by the snow, was completely destroyed, for a proof of which I have only to evidence its unsightly appearance at the present moment. The common bay and Portugal laurels also suffered severely whenever exposed to the south-east blast, and many of them still remain in a dubious state of existence. The laurustinus, which had flowered and grown luxuriantly for many years past in this district, has most of it been destroyed to the root; and I find that even such plants as remained partially green during the last summer, in consequence of some slight nourishment from the stem, are now all withered and dead, a result, however, I had anticipated from the appearance of the bark when it was examined last spring after the melting of the snow. In the midland and southern parts of England, where a still greater degree of cold prevailed, as indicated by the thermometer, and where no protection was afforded by a deep covering of snow, the destructive effects of the frost were more extensive, and few, except the hardiest evergreens, escaped without more or less injury, some being killed outright, others destroyed to the root, or totally denuded of their leaves; and it so happened, that many shrubs and trees, which in the North of England and Scotland showed but trifling symptoms of injury, were, further to the south, unable to resist the rigour of the cold. Thus, in a few short days, or perhaps hours, perished most of those beautiful evergreens and other ornamental shrubs which add so essentially to the elegant appearance of our country residences, and which form so prominent and peculiar a feature in English ornamental gardening; many of these had attained a growth of thirty or forty years, and were flourishing in the greatest perfection, having braved our usual winters without suffering any material injury. The loss, I may add, is still more severely felt, as time alone can repair it; and it is only the young and rising generation who can, even under the most favourable circumstances, again expect to behold a new succession equal to that which perished in the winter of 1838. Among the evergreens which showed an aptitude to bear an unwonted degree of cold uninjured, or only injured to a trifling extent, the Holly, the Rhododendrons *Ponticum*, *catawbiense*, *ferrugineum*, &c., the Yew, Box, Arbor Vitæ, and the Red Virginian Cedar, stood conspicuous; the Portugal Laurel also, except in very exposed situations, was not materially injured, and the common or large bay-leaved Laurel, in our own premises, escaped in most instances with the loss of the tender part of the shoot of the preceding season. Of the degree of cold experienced during the continuance of this storm, we have authentic accounts of the thermometer having descended to 4°

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and even 7° below zero, or 36° and 39° below freezing, in the midland and southern parts of the island. In this and adjacent districts it does not appear to have reached this intensity, the following being observations on which dependence can be placed. At Kelso, 140 feet above the sea-level, it fell to 3° F. on the night of the 21st of Jan. 1838, and during the continuance of the storm was frequently observed at 5° and 8° F. At Mellerstein, about 500 feet above the sea, a self-regulating thermometer of Adie's marked it at 2° F. during the nights of January 20 and 21, 1838. At Greenknow, near Gordon, and considerably higher than Mellerstein, 3° F. on the night of 21st January. And at Mertoun House about the 14th or 15th January, a common thermometer was observed 2° F., and again on the morning of January 21 at 2° F. Early in March the frost abated in rigour, and a slow thaw began to melt the vast accumulation of snow which had been drifted into the lanes, hollows, and hedge banks by the severe and oft-repeated gales that had occurred during the two months' frost. Up to this period none of those indications which we had been accustomed to hail as the harbingers of spring had been observed, such as the song of the misselthrush and the mavis, the cooing of the ringdove, or the pipe of the golden plover, which in usual seasons seldom fail to greet our ears with their welcome notes before February has advanced into the second week. On referring to my notes, I find it was not till the 5th and 6th of March that the peawit and golden plover were first seen, or the carol of the lark heard; on the 7th the thrush and missel-thrush were in song, being a period later by nearly a month than any I can find in a register kept for many years past, and it was not till the 20th that the congregated flocks of the ringdove began to disperse, or that they were heard cooing and exhibiting that peculiar flight which distinguishes the species at the time of pairing, and which in ordinary years seldom fails to occur before the 8th or 10th of February. It was now that the effects of this long-continued storm, so remarkable for the great degree of cold that accompanied it, became fully apparent; for instead of the host of birds that were wont to resort to our groves and plantations at this season, and whose "wood-notes wild" used to greet us in every direction, a few individuals or a solitary pair alone were to be seen; and where, a season or two before, a united concert of a multitude of thrushes might have been listened to on a calm mild spring evening, not more than two or three at far distant stations could now be heard; of our familiar attendant the red-breast, few survived to pour forth their impassioned lay, as the diminished numbers of this favourite bird, even after the increase of the

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year, clearly demonstrate. The same may be said of the blackbird, whose mellow whistle was scarcely recognised during the spring and summer ; and a like falling off was observed in regard to the wag-tails, wrens, and indeed all the indigenous insectivorous species, which suffered to a much greater extent than the *Conirostræ* or Finch tribe, which subsisting upon seeds and grains, found, if not ample, at least a sufficient quantity of food to support life in the stack and fold-yards where the others were perishing from the effects of hunger and cold. But the deficiency of the feathered tribe this year, I afterwards ascertained, was not confined to our indigenous or permanent residents : it extended to all those species which we call summer visitants, or which make our island their breeding resort and habitat during their polar migration ; for as the time of the arrival of the various species successively occurred, I found that throughout this district their numbers scarcely averaged a third of the usual supply, and this falling off not confined to a few particular forms, but extending to all the migratory species. The same was observed to prevail in the South of England, as in a communication from Mr. Yarrell, he mentions that the paucity of summer visitants had been generally remarked by those who interest themselves in ornithology and observations connected with it. The cause of this deficiency I attribute to the very cold and ungenial weather which prevailed not only throughout Britain, but over a great portion of the European Continent, at the time these birds usually undertake their periodical flights, and which, I imagine, stopped many on their course, and prevented that extended movement, which, in ordinary years, permits their reaching our own and even higher latitudes. That their lessened numbers arose from causes which affected them during their winter sojourn can scarcely be supposed, as that portion of the year, it is now well ascertained, is passed by most of them in the warm region of the African Continent or in those parts of Southern Europe where frost is scarcely known. Some few may undoubtedly have perished on the way, or from having advanced at too early a period into the North of Europe, where, in consequence of the chilling cold that prevailed, no appropriate food could be found, and thus died of hunger ; but the more probable reason is, I think, that already assigned, viz. that they were stopped on their advance by the peculiarity of the season, and were compelled to remain and nidificate in lower latitudes than they are generally accustomed to do. Of the few which did arrive, it was observed that their first appearance was nearly a fortnight later than has generally been the case, upon an average taken from a register of some twenty years

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